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IS 12168-1 (1987): Screwdriver Bits for Use with Ratchet Screwdrivers, Part 1: For Slotted Head Screws [PGD 5: Assembly Hand Tools]



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Indian Standard

SPECIFICATION FOR SCREWDRIVER BITS FOR USE WITH RATCHET SCREWDRIVERS PART 1 FOR SLOTTED HEAD SCREWS

1. Scope — Covers dimensions and other requirements of screwdriver bits, for slotted head screws, for use with ratchet screwdrivers.

2. Types — As shown in Fig. 1.

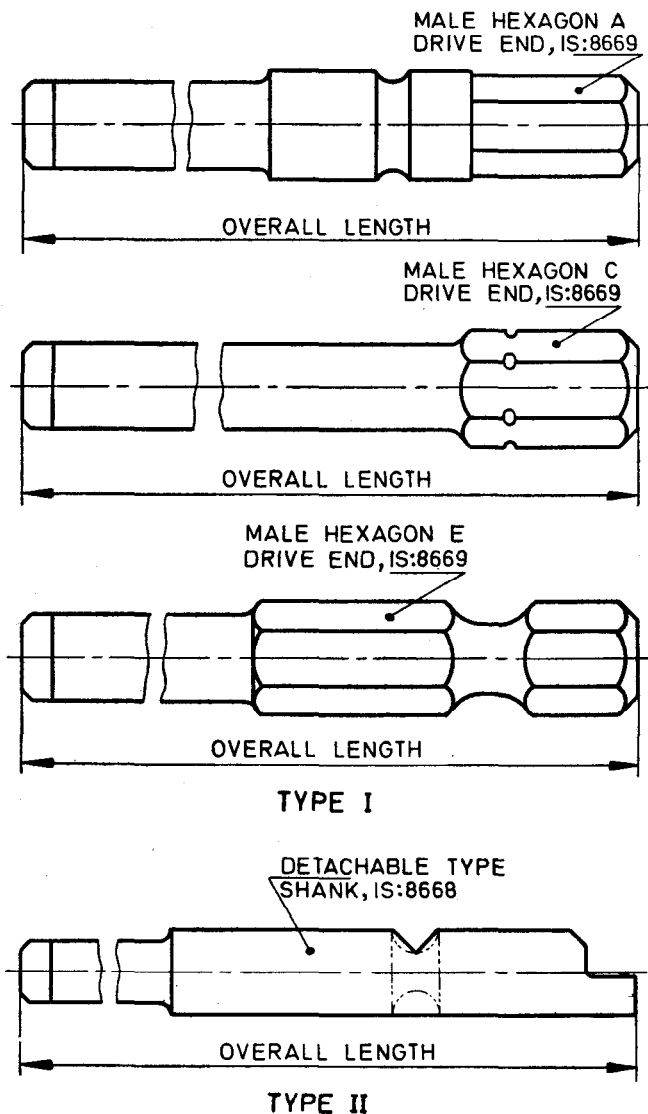


FIG. 1 TYPES OF SCREWDRIVER BITS

3. Dimensions

3.1 Screwdriver Points — Shall conform to the dimensions specified in Table 1 of IS : 844 (Part 1) - 1979 'Specification for screwdrivers: Part 1 Technical supply conditions (second revision)'.

3.2 Shank

3.2.1 Dimensions and tolerances on male hexagon drive end shank (Type I) shall be in accordance with IS : 8669-1977 'Dimensions for hexagon drive ends for power tools'.

IS : 12168 (Part 1) - 1987

3.2.2 Dimensions and tolerances on detachable type shanks (Type II), shall be in accordance with IS : 8668-1984 'Dimensions for spiral ratchet screwdriver shanks (*first revision*)'.

3.3 Overall Length of Bit

3.3.1 The length of the bits for shanks, up to and including nominal size 5.5 mm, shall be 76 ± 3.0 mm.

3.3.2 The length of the bits for shanks of nominal size above 5.5 mm shall be 95.0 ± 3.0 mm.

3.4 Recommended Point Thickness

3.4.1 Recommended point thickness in combination with male hexagon drive ends nominal dimensions, for Type I bits, may be as given in Table 1.

3.4.2 For Type II detachable shank bits, the sizes given in IS : 844 (Part 1)-1979 may be selected.

4. Material — Screwdriver bits shall be made from suitable steels meeting the requirements laid down in 5 and 8. An example of the suitable material is steel Designation T50Cr4V2 conforming to IS : 3749-1978 'Specification for tool and die steels for cold work (*first revision*)', or carbon steel Designation 50C4 of IS : 1570 (Part 2)-1979 'Schedules for wrought steels for general engineering purposes: Part 2 Carbon steels (unalloyed steels) (*first revision*)'.

5. Hardness — The bits shall be hardened in its full length to achieve a hardness of 48 to 58 HRC.

6. Designation — The bit shall be designated with its commonly used name, application, nominal size of bit, nominal size of driving end and the number of this Indian Standard.

Example:

Screwdriver bit for slotted head screw of nominal point size 0.4×1.6 Type II having nominal shank dimensions 5.5 shall be designated as:

Screwdriver Bit SHS 0.4×1.6 II 5.5 IS : 12168 (Part 1)

7. Workmanship and Finish

7.1 The bits shall be free from cracks, burrs, fins and flashes produced during forging/rolling.

7.2 The bits shall be protected against rust by plating with nickel, chromium or zinc; or by any other suitable process.

8. Torque Test — The bits shall be fixed to be ratchet screwdrivers conforming to IS : 12166-1987 'Specification for ratchet screwdrivers', or spiral ratchet screwdrivers conforming to IS : 12167-1987 'Specification for spiral ratchet screwdrivers'. For bits of Type I (with male hexagon drive ends), adaptors conforming to IS : 12153-1987 'Specification for adaptors for hexagonal insert bits for use with ratchet screwdrivers', shall be used. The screwdrivers fitted with the bits shall be subjected to torque given in Table 2. A suitable device for torque testing is shown in IS : 12167-1987. The screwdriver bits shall be made to set in the slot and the testing torque shall be applied without any jerks or impact. It shall gradually be increased till the specified testing torque is reached. At the end of the test, there shall be no permanent deformation or other defects, such as cracks.

9. Marking — The bits shall be legibly stamped with the manufacturer's name, initials or registered trade-mark, and designation of the bit.

9.1 Certification Marking — Details available with the Bureau of Indian Standards.

10. Sampling

10.1 In a consignment, all the screwdriver bits of same type and size manufactured from same material under similar conditions of production shall be grouped together to constitute a lot.

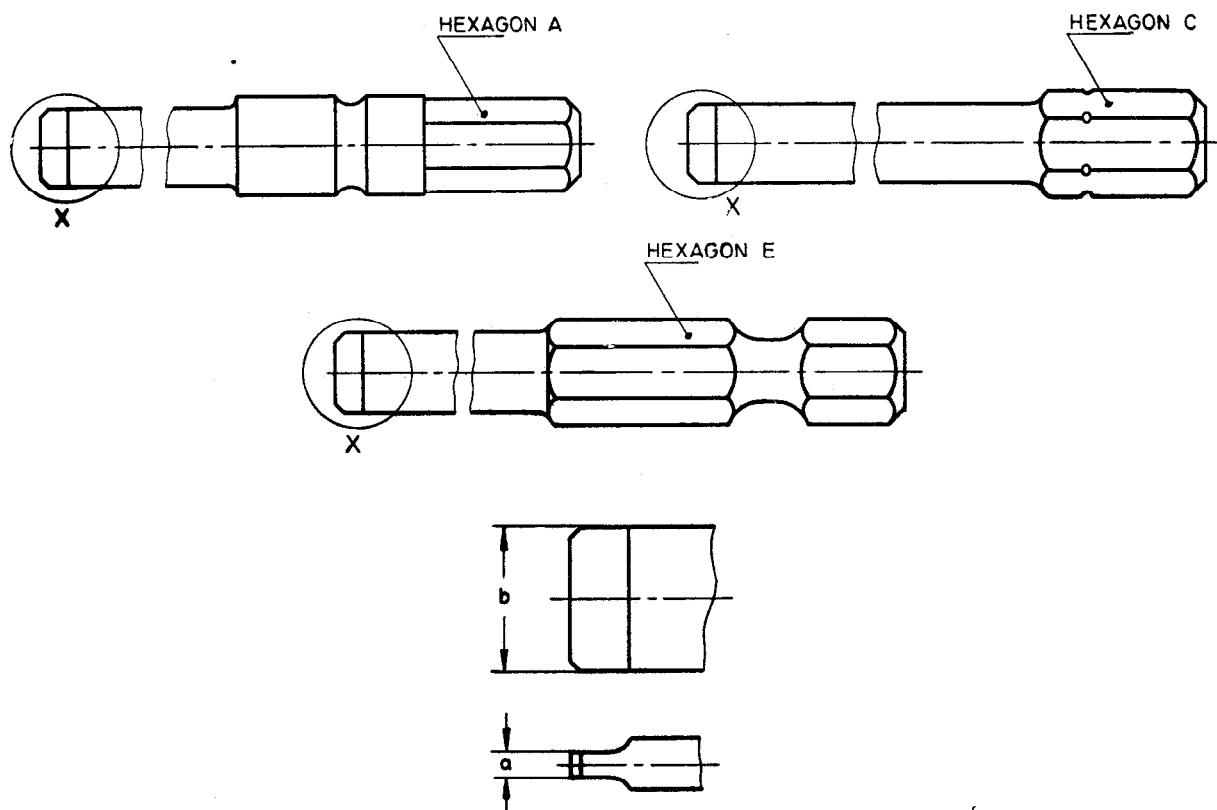
10.2 For ascertaining the conformity of the lot, the procedure for sampling and inspection as given in IS : 2500 (Part 1)-1973 'Sampling inspection tables: Part 1 Inspection by attributes and by count of defects (*first revision*)', shall be followed. The type of sampling plan, inspection level and acceptable quality level (AQL) to be followed for various characteristics shall be as given in 10.2.1 and 10.2.2.

10.2.1 For ascertaining the conformity of the lot with respect to dimensions, and workmanship and finish, a single sampling plan with Inspection Level IV and AQL of 1.5% as given in Tables 1 and 2 of IS : 2500 (Part 1)-1973 shall be followed.

TABLE 1 RECOMMENDED COMBINATIONS OF NOMINAL DIMENSIONS OF TIP

(Clause 3.4.1)

All dimensions in millimetres.

**TIP TYPES 2 AND 3
DETAILS AT X**

Nominal Dimensions of Tip $a \times b$	Male Hexagon as per IS : 8669					
	FORM A		FORM C			FORM E
	Nominal	Dimensions	Nominal	Dimensions		Nominal Dimensions
	3	5.5	4	6.3	8	6.3 11.2
0.4 × 2	×		×			
0.4 × 2.5	×		×			
0.5 × 3	×	×	×	×		×
0.5 × 4	×	×	×	×		×
0.6 × 3.5	×	×	×	×		×
0.6 × 4.5	×	×	×	×		×
0.8 × 4	×	×	×	×		×
0.8 × 5.5	×	×	×	×	×	×
1 × 5.5		×		×	×	×
1.2 × 6.5		×		×	×	×
1.2 × 8		×		×	×	×
1.6 × 8				×	×	×
1.6 × 10				×	×	×
2 × 12					×	×
2.5 × 14						×

Note — For other details of male hexagon end, see IS : 8669-1977 Dimensions for hexagon drive ends for power tools.

TABLE 2 TEST TORQUE REQUIREMENTS
(Clause 8)

Nominal Size of Tool Bit Shank mm		Testing Torque, Min N. m
Type II	Type I	
5.5	3 4 5.5	8
7	6.3	10
8	8	12
	11.2	

10.2.2 For ascertaining the conformity of the lot with respect to hardness and torque test, a single sampling plan with Inspection Level I and AQL of 1.5% as given in Tables 1 and 2 of IS : 2500 (Part 1)-1973 shall be followed.

EXPLANATORY NOTE

These screwdriver bits are used either for slotted head screws or for cross-recessed head screws. Screwdriver bits for slotted head screws are covered in this part of the standard, whereas for cross-recessed head screws for use with ratchet screwdrivers, bits have been covered in Part 2 of this standard.

These types of bits are generally used with ratchet screw drivers for tightening/loosening of slotted head wood screws or machine screws. For Type I bits, adaptors conforming to IS : 12153-1987 are used whereas Type II bits can be directly used in the screw drivers. These bits may also be used with pneumatically operated tools. For cross-recessed head screws, bits conforming to Part 2 of this standard may be used.

While preparing this specification, assistance has been derived from ISO 2351-1985 'Screw driver bits for slotted head screws, with male hexagon drive', issued by the International Organization for Standardization (ISO).